

Attorney Docket No. 9007.0003  
Customer No. 22,852

UNITED STATES  
PATENT APPLICATION  
FOR  
DEVICE INCLUDING A COVER HAVING LIMITED OPENING MOVEMENT

This application claims the benefit of priority under 35 U.S.C. § 119(e) of U.S. provisional patent application No. 60/431,582, filed December 7, 2002.

## BACKGROUND OF THE INVENTION

### Field of the Invention

The present invention relates to a device including a cover having a limited extent of opening movement with respect to a base. In particular, some aspects of the invention relate to a cosmetic compact arranged to position a cover mirror at a desired angle with respect to a base.

### Description of the Related Art

Containers come in a number of different shapes, sizes and forms. One type of conventional container arrangement generally includes a lid movable with respect to another container portion so as to permit one or more items or substances to be removed from an interior of the container and/or added to the container interior. For a variety of different reasons, during use of such conventional arrangements, there is sometimes a desire to orient the container lid in a particular position. For example, users sometimes orient the lid of a cosmetic compact in a particular fashion so as to obtain a better view of themselves in a mirror during application of a cosmetic product.

Although there have been some prior attempts at designing containers with lids that can be oriented in a particular manner during use, there are drawbacks associated with at least some approaches. For example, some designs cannot be easily adapted for use with certain container mechanisms facilitating the opening

movement of the lid. In addition, at least some prior approaches detract from the aesthetic quality of the container and/or unduly increase cost.

For these and other reasons, there is a need for alternative approaches.

### SUMMARY

In the following description, certain aspects and embodiments of the present invention will become evident. It should be understood that the invention, in its broadest sense, could be practiced without having one or more features of these aspects and embodiments. In other words, these aspects and embodiments are merely exemplary.

One aspect of the invention relates to a device including a cover and a base. The base may define at least one compartment comprising an opening. The cover may be movable with respect to the base, in a generally hinge-like manner, between a closed position in which the cover covers the opening of the compartment and an open position in which access to the compartment is permitted. The device may be configured to limit the angular extent of generally hinge-like movement of the cover.

In at least some examples, the opening movement of the cover may be a generally rotational movement about a hinge axis positioned generally perpendicular to a direction that the compartment opening faces.

In one aspect, an inner surface of the cover may comprise a mirror.

In another aspect, the device may include at least one first magnet associated with the base and at least one second magnet associated with the cover. The first and second magnets may couple the base and the cover together so as to permit the movement of the cover with respect to the base, in the generally hinge-like

manner, between the closed position and the open position. In some examples, the at least one first magnet may include a pair of first magnets and the at least one second magnet may include a pair of second magnets.

In a further aspect, the device may include a cover opening limiter configured to limit the angular extent of generally hinge-like movement of the cover. In some examples, the cover opening limiter may comprise a first end portion associated with the cover and a second end portion associated with the base. For example, the base may define at least one base recess and the cover opening limiter may extend from the cover and include an end portion configured to be engaged with a portion of the base defining the base recess when the cover is in the open position. The second end portion of the cover opening limiter may comprise a projection that engages with the base (e.g., the portion defining the base recess) when the cover is in the open position. The first end portion of the cover opening limiter may comprises an axle configured to couple the first end portion of the cover opening limiter to a portion of the cover defining a cover recess.

In still another aspect, the device may be configured so that the end portion of the cover opening limiter moves into the base recess when the cover is moved from the open position to the closed position.

In yet another aspect, the device (e.g., the cover limiter, if it is present, and/or any other part of the device) may be configured to limit an extent of generally hinge-like movement of the cover so that when the cover is moved from the closed position to the open position, the cover moves with respect to the base up to a maximum angular extent of less than 180 degrees and greater than or equal to about 100

degrees. In some examples, the maximum angular extent may be less than or equal to about 160 degrees. For example, the maximum angular extent may be about 130 degrees.

In at least some examples where the base has a planar upper surface and/or a planar lower surface and the cover has a mirror having a planar face, the plane of the base surface(s) and the planar face of the mirror may define a non-zero angle when the cover is in the open position. The angle may be less than 180 degrees (e.g., less than or equal to 160 degrees) and greater than or equal to about 100 degrees. For example, the angle may be about 130 degrees.

In an even further aspect, the device may be a cosmetic compact, and the device may include a cosmetic product and/or a cosmetic applicator disposed in the compartment.

In one aspect, the device may be configured to generally stabilize the cover with respect to the base when the cover is in the open position.

One more aspect relates to the base optionally including a first member and a second member, wherein the first and second members may include magnets coupling the first and second members together with one of the members being stacked on the other member. For example, each of the members may be generally plate-shaped. In some examples, a cosmetic product may be contained in the first member and a differing cosmetic product may be contained in the second member. Optionally, a cosmetic applicator may be contained in one or more of the members. In some examples, each of at least some of the members may include a respective

portion defining a recess and being configured to engage with the end portion of the cover opening limiter.

Aside from the structural arrangements set forth above, the invention could include a number of other arrangements such as those explained hereinafter. It is to be understood that both the foregoing description and the following description are exemplary only.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings are incorporated in and constitute a part of this specification. The drawings illustrate exemplary embodiments and, together with the description, serve to explain some principles of the invention. In the drawings,

Fig. 1 is a perspective view of an embodiment of a device in accordance with the present invention, showing a cover of the device in its open position;

Figs. 2A and 2B are cross-section views showing the device of Fig. 1 with the cover in its open and closed positions, respectively; to show details, a mirror and a cosmetic product shown in Fig. 1 are omitted from Figs. 2A and 2B;

Figs. 3A and 3B are views of portions of Figs. 2A and 2B, respectively;

Fig. 4 is a perspective view of an exemplary cover opening limiter of the device of Fig. 1;

Fig. 5 is a further view of a portion of Fig. 3B;

Fig. 6 is a further view of a portion of Fig. 3A;

Fig. 7A and 7B are cross-section views similar to those of Figs. 3A and 3B, showing an alternative embodiment of a device with its cover in the open and closed positions, respectively;

Figs. 8A and 8B are perspective views of a further embodiment of a device with its cover in the open and closed positions, respectively;

Fig. 9 is a perspective view of another alternative embodiment of a device with its cover in the open position;

Fig. 10 is a top view of an exemplary plate-shaped member of the device of Fig. 9;

Fig. 11 is a top view of another exemplary plate-shaped member of the device of Fig. 9;

Figs. 12 and 13 are respective back and side views of plate-shaped members of the device of Fig. 9; and

Figs. 14 and 15 are views similar to those of Figs. 5 and 6, respectively, showing an example of an alternative cover stabilization arrangement.

#### DESCRIPTION OF A FEW EXEMPLARY EMBODIMENTS

Reference will now be made in detail to a few exemplary embodiments of the invention. Wherever possible, the same reference numbers are used in the drawings and the description to refer to the same or like parts.

Fig. 1 shows an embodiment of a device 10 including a cover 20 and a base 30. The cover 20 is movable with respect to the base 30, in a generally hinge-like manner, between an open position, shown in Figs. 1 and 2A, and a closed position, shown in Fig. 2B.

The base defines at least one compartment 32 including an upward facing opening 34. When the cover 20 is in its closed position, the cover 20 covers the

opening 34 and, when the cover 20 is in its open position, a user is able to access the compartment 32.

The device 10 is configured to limit the angular extent of the generally hinge-like movement of the cover 20 with respect to the base 30. In the embodiment of Fig. 1, the device 10 includes a cover opening limiter 40 that limits the generally hinge-like movement of the cover 20. The cover opening limiter 40 has one end portion associated with the cover 20 and an opposite end portion associated with the base 30.

There are many possible types of cover opening limiters that might be used to limit the extent of the cover's hinge-like movement. As shown in Fig. 4, the exemplary cover opening limiter 40 has a curved configuration shaped generally in the form of a half-pipe having an axle 42 at one end and an inward facing projection 44 at an opposite end. Opposite parts of the axle 42 project beyond the remainder of the cover opening limiter 40.

Referring to Figs. 1, 2A, 2B, 2C, and 2D, the base 30 defines at least one base recess 36. The base recess 36 includes an upward facing hole defined by a ledge extension 38. The projection end of the cover opening limiter 40 extends into the recess 36 via the recess hole. When the cover 20 is in its open position, the projection 44 engages with the ledge extension 38 so as to prevent further angular movement of the cover 20 beyond the open position. Movement of the cover 20 from its open position to its closed position causes the end portion of the cover opening limiter 40 to be moved further into the base recess 36 so that the cover opening limiter 40 does not prevent closure of the cover 20.



The cover 20 includes at least one cover recess 22 including a hole on the inner face of the cover 20. The axle portion of the cover opening limiter 40 is positioned in the cover recess 22 while the remainder of the cover opening limiter 40 extends from cover 20 by passing through the cover recess hole. The axle 42 has a length greater than that of the cover recess hole, causing the axle 42 to be retained in the cover recess 22 when the cover is in its open position. As shown by comparing Figs 3A and 3B, the axle 42 rotates and slides in the cover recess 22 when the cover 20 is moved between its open and closed positions. The rotatability and/or slidability of the cover opening limiter 40 optionally enables the cover opening limiter 40 to fit within a relatively small area and/or a confined space.

In the embodiment of Fig. 1, the device 10 is in the form of a cosmetic compact including both a mirror 24 forming part of the inner surface of the cover 20 and a cosmetic product 37 contained in the base compartment 32. The cosmetic product 39 may be within an optional pan (not shown) that is attached within the compartment 32. The cosmetic product could be any form of solid, semi-solid, powder, and/or friable cosmetic product. For example, the cosmetic product could be a cosmetic product intended to be applied to the skin, lips, eyelids, cheeks, finger nails, toe nails, and/or hair (e.g., scalp hair or eyelashes) In some examples, the cosmetic product could be a makeup product (e.g., a makeup product having a coloration) and/or include a fragrance. As shown in Fig. 11, described below, the base compartment might additionally or alternatively contain at least one cosmetic product applicator 370.

The device 10 may have a generally box-shape (e.g., generally parallelepiped) when the cover 20 is in its closed position. Other shapes are also possible.

In the embodiment of Fig. 1, the cover opening limiter 40 may be configured to limit the extent of generally hinge-like movement of the cover 20 so that when the cover 20 is moved from the closed position to the open position, the cover 20 moves with respect to the base 30 up to a maximum angular extent of less than 180 degrees (e.g., less than or equal to about 160 degrees) and greater than or equal to about 100 degrees. For example, the maximum angular extent may be about 130 degrees.

The limited opening angle of the cover 20 with respect to the base 30 may position the mirror 24 at a particular angle, possibly assisting a user in viewing herself in the mirror 24 during use of the device 10 (e.g., during application of a cosmetic product when the base 30 is resting on a somewhat flat and level surface or resting in the user's hand). In the embodiment of Fig. 1, the base 30 has planar upper and lower surfaces and the mirror 24 has a planar face. When the cover 20 is in the open position, the plane of the mirror face may define a non-zero angle with respect to the plane of one or more of the base surfaces. The angle may be less than 180 degrees (e.g., less than or equal to 160 degrees) and greater than or equal to about 100 degrees. For example, the angle may be about 130 degrees.

The device 10 may be configured so that the cover 20 is maintained in its open position as long as the base 30 is placed on a somewhat level surface. In some examples, the device 10 may be configured to generally stabilize the cover 20

with respect to the base 30 when the cover 20 is in its open position. As shown in Figs. 5 and 6, the device 10 may include a cover stabilizer in the form of a generally V-shaped notch 26 on the back of the cover 20. The V-shaped notch 26 could be configured to engage with a corner edge of the base 30, as shown in Fig. 6, when the cover 20 is in its open position, so as to provide at least some additional vertical cover stabilizing force acting along with the weight force of the cover 20. Although the shape of the notch 26 is V-shaped, many other shapes are possible. Additionally (or alternatively), the cover 20 and/or the base 30 may include one or more extensions (e.g., an extension including a notch) that may limit cover movement and/or provide stabilization. One example of an alternative cover stabilizer is shown in Figs. 14 and 15 which depict an extension 92 of the cover 20 that engages with a groove 94 on the base 30. Such an alternative cover stabilization arrangement could be integrated into any of the device embodiments shown in the drawings.

Although the cover opening limiter 40 is shown as a discrete piece movable with respect to the cover 20, alternative arrangements (not shown) where the opening limiter and cover are rigidly connected to one another and/or formed of a common piece of material are also possible. With the exception of the cosmetic product 37 and possibly also the mirror 24, the device 10 may be formed entirely or partially of a molded plastic material or a metal.

In some embodiments where there is a cover opening limiter, the device may include a spring (not shown) that exerts a spring force on the cover opening limiter. For example, a leaf spring may be provided to exert a spring force against a back

portion of the cover opening limiter (e.g., such a spring could be positioned in the base recess) and/or a torsion spring could be provided (e.g., in the cover recess) to act on the cover limiter axle. For some embodiments, a spring arrangement might be considered as an option if the device 10 is to be used while in a position that does not allow the force of gravity to act in a desired way.

In the embodiment of Fig. 1, there is no mechanical connection between the cover 20 and the base 30 other than the cover opening limiter 40. The exemplary device 10 is configured so that the projection end of the cover opening limiter 40 is removable from the base recess 36 so as to uncouple the base 30 from both the cover and the cover opening limiter 40. For example, the cover opening limiter 40 could be removed from the base recess 36 by moving the cover 20 upward and inward (i.e., upward and in the left hand direction in the view of Fig. 3B) with respect to the base 30 before initiating the opening movement of the cover 20. Such detachability of the base 30 from the cover opening limiter 40 optionally permits another base to be substituted in place of the base 30 of Fig. 1 by coupling the cover opening limiter 40 to the other base. Figs. 9, 10, and 11, described below, show examples of exemplary forms of other bases that might be substituted in place of the base 30 of Fig. 1.

Figs. 7A and 7B show an exemplary device 100 having a supplemental mechanical connection between the cover 20 and base 30 in addition to the cover opening limiter 40. The supplemental mechanical connection may be in the form of a pin hinge 101. Alternatively (or additionally), there could be any other form of mechanical hinge, such as a "living hinge," snap hinge, film hinge, and/or any other

type of mechanical hinge. Optionally, the rear surfaces of the cover 20 and base 30 of the device 100 may be configured to contact one another, as shown at 103 in Fig. 7A, when the cover 20 is moved to the open position, so as to limit the angular extent of generally hinge-like movement of the cover 20 and/or place a mirror surface at an angle with respect to the base (e.g., the limited angular extent and/or angle could be like that described above in connection with Fig. 1). Accordingly, the embodiment shown in Fig. 7A could be modified to remove the cover opening limiter 40 while still providing cover opening limiting and/or angular positioning of a cover mirror.

Figs. 8A and 8B show a further embodiment of a device 200. The device 200 may be configured in a manner like that of the device 10 of Fig. 1 or the device 100 of Figs. 7A and 7B (either with or without the cover opening limiter 40). In addition, the device 200 includes one or more magnets 50 associated with the cover 20 and one or more magnets 60 associated with the base 30. To be more specific, the device 200 has a pair of the magnets 50 integrated into the cover 20 and a pair of magnets 60 integrated into the base 30. The magnets 50 and 60 may be arranged to create a magnetic coupling of the cover 20 and the base 30 during the movement of the cover 20 with respect to the base 30, in the generally hinge-like manner, between the closed position and the open position. In addition, the magnets may be arranged to maintain the cover 20 in its closed position, shown in Fig. 8B, until a sufficient cover opening force is applied by a user.

Referring to Fig. 8B, each of the magnets 50 and 60 may have a generally parallelepiped shape and the longest dimension of each of the magnets 50 and 60

may be positioned in a direction generally perpendicular to the axis about which the generally hinge-like movement of the cover 20 takes place. One of the pair of magnets 50 is magnetically coupled to a respective one of the pair of magnets 60 and the other of the magnets 50 is magnetically coupled to the other of the magnets 60. In each of the coupled sets of magnets 50 and 60, the poles of the magnets 50 and 60 generally face in opposite directions. In the exemplary embodiment of Fig. 8B, the South poles (S) of the cover magnets 50 face in a direction generally opposite to that of the North poles (N) of the base magnets 60, and the North poles (N) of the cover magnets 50 face toward the South poles (S) of the base magnets 60 (or vice versa (not shown)).

When the cover 20 is in its closed position, the cover magnets 50 may be generally parallel with the base magnets 60 and, in each coupled magnet set, one of the magnets 50 and 60 may overlap the other. During the opening movement of the cover 20, the cover magnets 50 may be magnetically coupled to the base magnets 60 at all times from the closed position to the open position. When the cover is in the open position, the magnets 50 and 60 may be arranged to apply magnetic forces that stabilize the cover 20 with respect to the base 60.

In at least some examples, the magnets 50 and 60 may define at least part of a virtual hinge as described in U.S. Patent Application Publication No. 2002/01532276, published on October 24, 2002, the disclosure of which is incorporated herein by reference to an extent that is not inconsistent with the subject matter described herein.

Fig. 9 shows a further embodiment of a device 300. The device 300 may be configured either in a manner like that of the device 200 of Fig. 8, or in a manner like that of the device 200 but without the cover magnets 50. In addition, the device 300 includes a base 30 comprised of a plurality of generally plate-shaped members 330A, 330B, and 330C (e.g., tiles) stacked one upon the other in a generally parallel and generally overlapping manner. Although three plate-shaped members 330A, 330B, and 330C are shown, there could be any number of such members (e.g., two, three, or more than three).

Each of the plate-shaped members 330A, 330B, and 330C may be configured in substantially the same manner but contain differing products, substances, items, and/or objects. (Alternatively, the plate-shaped members may be configured somewhat different from one another and/or contain substantially the same products, substances, items, and/or objects.) The plate shaped member 330A may be configured like the base 20 shown in Fig. 1 and contain a cosmetic product 39. As shown in Fig. 10, the plate shaped member 330B may contain a cosmetic product 39B differing from the cosmetic product 39 (e.g., having a differing color). Referring to Fig. 11, the plate-shaped member 330C may contain at least one cosmetic applicator 370 configured to apply the cosmetic product 39 and/or 39B, for example

As shown in Figs. 9-13, the plate-shaped members 330A, 330B, and 330C may include magnets 60, 60B, and 60C coupling adjacent pairs of the members 330A, 330B, and 330C together in a manner stacking them together. The member 330A has a pair of magnets 60 magnetically coupled to a respective pair of magnets

60B of the member 330B. In turn, the pair of magnets 60B of the member 330B is magnetically coupled to a respective pair of magnets of the member 330C.

The magnetic coupling of the members may enable the members to be arranged in a stacked order differing from that shown in Fig. 9. For example, the member 330C could be removed from the member stack and repositioned so that it becomes sandwiched between the members 330A and 330B. In addition (or alternatively), the magnetic coupling may enable one or more of the members to be removed from the device and/or enable one or more additional members to be added to the member stack. Such abilities may enable an individual to customize the device with different orders of members and/or different numbers of members.

Each of the members 330A, 330B, and 330C may include a respective portion defining a base recess 36, 336B, 336C configured to engage with the projection end portion of the cover opening limiter 40. If the device 300 includes a cover limiter 40 (and if the cover is not joined to the base by any other non-releasable connection, e.g., a permanent mechanical hinge connection), the cover limiter 40 may be removed from the base recess 36 and placed in the respective base recess (e.g., 336B, 336C) of one of the other members so as to reposition another member adjacent to the cover 20.

In at least some examples, the members 330A, 330B, and 330C may define at least part of a virtual hinge as described in above-mentioned U.S. Patent Application Publication No. 2002/01532276.

It will be apparent to those skilled in the art that various modifications and variations can be made to the structure described herein. Thus, it should be



understood that the invention is not limited to the subject matter discussed in the specification. Rather, the present invention is intended to cover modifications and variations.